

WHAT IS CLAIMED IS:

1. A drive mechanism, comprising:

an electromechanical transducer having a pair of ends in an extending and contracting direction;

5 a drive member fixed to one of the pair of ends of the electromechanical transducer;

10 a driven member which is driven by the drive member and which contacts frictionally with the drive member under a predetermined frictional force exerting therebetween; and

15 a controller for supplying the electromechanical transducer with drive pulses, wherein the controller includes a driving circuit which generates a first set of the drive pulses for driving the driven member, and includes a frictional force reducing circuit which generates a second set of the drive pulses for reducing a frictional force exerting between the drive member and the driven member.

20 2. A drive mechanism as claimed in claim 1, wherein the second set of the drive pulses generated by the frictional force reducing circuit have sinusoidal waveforms.

25 3. A drive mechanism as claimed in claim 2, wherein the frictional force reducing circuit is arranged to change at least one of a frequency and an amplitude of the

sinusoidal waveforms of the second set of the drive pulses so as to adjust the reducing amount of the frictional force exerting between the drive member and the driven member.

4. A drive mechanism as claimed in claim 1, wherein
5 the drive pulses supplied to the electromechanical transducer by the controller have rectangular waveforms.

5. A drive mechanism as claimed in claim 1, wherein
the drive pulses supplied to the transducer by the
controller have rectangular waveforms, and wherein the
10 controller is arranged to change a duty ratio of the
rectangular waveforms thereof, so that the controller is
allowed to drive the driven member and to reduce the
frictional force exerting between the drive member and the
driven member.

15 6. A lever device in which a lever member is driven
by the drive mechanism as claimed in claim 1.

7. A drive mechanism as claimed in claim 1, further
comprising a charge mechanism in which a spring extending
and contracting in a moving direction of the driven member
20 is disposed, and in which the spring is charged by movement
of the driven member.

8. A shutter mechanism driven by the drive mechanism
as claimed in claim 7.

9. A drive controlling method for controlling a
25 drive mechanism which comprises:

an electromechanical transducer having a pair of ends in an extending and contracting direction;

a drive member fixed to one of the pair of ends of the electromechanical transducer; and

5 a driven member which is driven by the drive member and which contacts frictionally with the drive member under a predetermined frictional force exerting therebetween,

the drive controlling method comprising the steps of:

generating drive pulses; and

10 supplying the electromechanical transducer with the drive pulses, wherein a mode in which the driven member is moved, a mode in which a frictional force between the driven member and the drive member is reduced, and a mode in which the driven member rests relative to the drive member are switched over by changing waveforms of the drive pulses.

15 10. A drive controlling method as claimed in claim 9, wherein the drive pulses have sinusoidal waveforms.

20 11. A drive controlling method as claimed in claim 10, wherein the reducing amount of a frictional force exerting between the drive member and the driven member is adjusted by changing at least one of the frequency and the amplitude of the sinusoidal waveforms of the drive pulses.

12. A drive controlling method as claimed in claim 9, wherein the drive pulses have rectangular waveforms.

13. A drive controlling method as claimed in claim 12, wherein a duty ratio of the rectangular waveforms of
5 the drive pulses is changed so as to drive the driven member and so as to reduce a frictional force exerting between the drive member and the driven member.